

WE CLAIM:

1. A method for displaying data obtained by transmitting ultrasonic energy into a subject body, which body includes blood flowing in blood vessels bounded by the vessels' walls and supporting tissues having muscles and tissue, comprising the steps of:

receiving reflected ultrasonic energy from the subject body, which reflected energy comprises Doppler shifted signals reflected by the blood and unshifted signals and signals Doppler shifted by less than a threshold amount by the vessels' walls and the supporting tissues; and

digitally processing the reflected ultrasonic energy producing a data stream in order to measure and display resultant data related to the blood flowing in the blood vessels,

wherein the digitally processing step comprises filtering to remove the unshifted signals and the signals Doppler shifted by less than a threshold amount by digitally processing the data stream sequentially in a wall filter and a mean removal filter.

2. A method of Claim 1 comprising processing the resultant data to produce recordable or displayable information related to the blood flowing in the blood vessels.

3. A method of Claim 2 comprising recording or displaying the information related to the blood flowing in the blood vessels.

4. A method of Claim 2 wherein the information related to the blood flowing in the blood vessels comprises vector velocity and flow volume.

5. A method for displaying data obtained by transmitting ultrasonic energy into a subject body, which body includes blood flowing in blood vessels bounded by the vessels' walls and supporting tissues having muscles and tissue, comprising the steps of:

receiving reflected ultrasonic energy from the subject body, which reflected energy comprises Doppler shifted signals reflected by the blood and unshifted signals and signals Doppler shifted by less than a threshold amount by the vessels' walls and the supporting tissues; and

digitally processing the reflected ultrasonic energy producing a data stream in order to measure and display resultant data related to the blood flowing in the blood vessels,

wherein the digitally processing step comprises filtering to remove the unshifted signals and the signals Doppler shifted by less than a threshold amount by digitally processing the data stream sequentially in a mean removal filter and a trend removal filter.

6. A method of Claim 5 comprising processing the resultant data to produce recordable or displayable information related to the blood flowing in the blood vessels.

7. A method of Claim 6 comprising recording or displaying the information related to the blood flowing in the blood vessels.

8. A method of Claim 6 wherein the information related to the blood flowing in the blood vessels comprises vector velocity and flow volume.

9. A method for displaying data obtained by transmitting ultrasonic energy into a subject body, which body includes blood flowing in blood vessels bounded by the vessels' walls and supporting tissues having muscles and tissue, comprising the steps of:

receiving reflected ultrasonic energy from the subject body, which reflected energy comprises Doppler shifted signals reflected by the blood and unshifted signals and signals Doppler shifted by less than a threshold amount by the vessels' walls and the supporting tissues; and

digitally processing the reflected ultrasonic energy producing a data stream in order to measure and display resultant data related to the blood flowing in the blood vessels,

wherein the digitally processing step comprises filtering to remove the unshifted signals and the signals Doppler shifted by less than a threshold amount by digitally processing the data stream sequentially a wall filter, a mean removal filter and a trend removal filter.

10. A method of Claim 9 comprising processing the resultant data to produce recordable or displayable information related to the blood flowing in the blood vessels.

11. A method of Claim 10 comprising recording or displaying the information related to the blood flowing in the blood vessels.

12. A method of Claim 10 wherein the information related to the blood flowing in the blood vessels comprises vector velocity and flow volume.

13. A method for displaying data obtained by transmitting ultrasonic energy into a subject body, which body includes blood flowing in blood vessels bounded by the vessels' walls and supporting tissues having muscles and tissue, comprising the steps of:

receiving reflected ultrasonic energy from the subject body, which reflected energy comprises Doppler shifted signals reflected by the blood and unshifted signals and signals Doppler shifted by less than a threshold amount by the vessels' walls and the supporting tissues; and

digitally processing the reflected ultrasonic energy producing a data stream in order to measure and display resultant data related to the blood flowing in the blood vessels,

wherein the digitally processing step comprises filtering to remove the unshifted signals and the signals Doppler shifted by less than a threshold amount by digitally processing the data stream in a finite impulse response filter with transient elimination.

14. A method of Claim 13 comprising processing the resultant data to produce recordable or displayable information related to the blood flowing in the blood vessels.

15. A method of Claim 14 comprising recording or displaying the information related to the blood flowing in the blood vessels.

16. A method of Claim 14 wherein the information related to the blood flowing in the blood vessels comprises vector velocity and flow volume.

17. A device for digitally processing a data stream resulting from detection of ultrasound reflections from a subject including blood flowing within blood vessel walls, in order to remove unshifted signals and signals Doppler shifted by less than a threshold amount, the device comprising: a wall filter, a mean removal filter, and a threshold module which are sequentially connected.

18. A device of Claim 17 comprising a Doppler processing algorithm to produce image data and spectral data.
19. A device of Claim 18 comprising an image algorithm to supply spatial and temporal data required for storage or display.
20. A device for digitally processing a data stream resulting from detection of ultrasound reflections from a subject including blood flowing within blood vessel walls, in order to remove unshifted signals and signals Doppler shifted by less than a threshold amount, the device comprising: a mean removal filter and a trend removal filter connected sequentially.
21. A device of Claim 20 comprising a Doppler processing algorithm to produce image data and spectral data.
22. A device of Claim 21 comprising an image algorithm to supply spatial and temporal data required for storage or display.
23. A device for digitally processing a data stream resulting from detection of ultrasound reflections from a subject including blood flowing within blood vessel walls, in order to remove unshifted signals and signals Doppler shifted by less than a threshold amount, the device comprising: a wall filter, a mean removal filter, and a trend removal filter which are sequentially connected.
24. A device of Claim 23 comprising a Doppler processing algorithm to produce image data and spectral data.
25. A device of Claim 24 comprising an image algorithm to supply spatial and temporal data required for storage or display.
26. A device for digitally processing a data stream resulting from detection of ultrasound reflections from a subject including blood flowing within blood vessel walls, in order to remove unshifted signals and signals Doppler shifted by less than a threshold amount, the device comprising: a finite impulse response filter with transient elimination.
27. A device of Claim 26 comprising a Doppler processing algorithm to produce image data and spectral data.
28. A device of Claim 27 comprising an image algorithm to supply spatial and temporal data required for storage or display.